

File of comments about data quality for Certified LIMS Version 6 (V6) Level 2 Data.

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DAYS SELECTED FOR DETAILED ALGORITHM TESTING

Day 1979 01 13—Significant zonal mean T difference in NH higher latitudes over 2 days (13–11, there were no data taken on day 12), due to changing atmospheric structure. There are PSC remnants at 30 mb in water and at 10 mb in NO₂.

Day 1979 01 22—This day represents a stringent test of the pressure registration and temperature retrieval algorithm. Further, it has been difficult to attain accurate retrievals of water vapor and NO₂ in the mid to lower stratosphere near the winter pole, where the temperatures are cold (and S/N low), primarily because there is a mismatch between the vertical FOVs for the temperature (CO₂ channels) and these species (wide FOV) channels. The FOVs for the ozone and HNO₃ channels are much more similar to that of CO₂ and their profiles have better quality. Still the results for day 022 look good for all parameters.

Day 1979 05 05—Results for May 5 are good.

Day 1978 11 08—The zonal mean plot, h2o_std_asc.gif, for November 8 does not look right at high NH latitudes of the middle troposphere. Such low values are subject to large errors, are not based on good sampling, and should not be trusted. Also the minimum values of tropical water below about the 40–mb level (here and on most other LIMS days) are based on just a very few scans; thus those values have large uncertainties and are not representative of the zonal mean. NO₂ is not representative at those levels of the tropics either. Ozone and HNO₃ are not zonally representative at about the 70–mb level and below in the tropics.

Note that the PSC template for Version (V5) is in Table 6 of the NASA Technical Paper 2625 by Remsberg et al. [1986], Description of Data on the Nimbus 7 LIMS Map Archive Tape: Ozone and Nitric Acid, December, 1986.

OCTOBER 1978

1978 10 25—LIMS was off for several orbits on this day (at beginning of mission).

1978 10 26—Excess water at 20 mb, 60S? LIMS did not take data for 3 orbits.

1978 10 27—Excess nitric acid and ozone at 40S, 70 mb over Pacific region. LIMS was off for two orbits on this day. A number of NO₂ scan segments exceed our upper limit threshold and have been removed.

1978 10 28—Quite a few scans were screened out for descending orbits by the RAT analysis procedure, but not for the ascending orbits. Was ERB scanner operating at this time causing excess jitter?

1978 10 29—LIMS off for one orbit on this day. Large V6 minus V5 T(p) difference in upper stratosphere near 60N.

1978 10 30—Geopotential shows wave 2 at 70 mb at NH high latitudes, but temperature does not (even at 30 mb). Was also present in geopotential at 70 mb for Oct 28 and 29. Wave 2 is not present on the following day, October 31. May indicate a problem with continuity of the daily 50 mb base heights from NMC.

1978 10 31—Data are OK.

NOVEMBER, 1978

1978 11 01—A lot of HNO₃ profiles were screened out in the upper stratosphere for orbit 107. Was ERB scanning on that orbit?

1978 11 02—A number of NO₂ profiles exceed the threshold mixing ratio for orbits 121 and 122. Jitter effect?

1978 11 03—Plots look OK.

1978 11 04—Data look good.

1978 11 05—Data are OK on this day.

1978 11 06—Plots show no significant anomalies.

1978 11 07—On orbit 203 there were a lot of water and NO₂ scans that exceeded their m.r. threshold at top of scan.

1978 11 08—Data are OK.

1978 11 09—Data look good.

1978 11 10—Data plots look reasonable.

1978 11 11—LIMS data look good.

1978 11 12—Ozone is high over Africa at 70 mb, possibly evidence of contamination by thin clouds. There is excessive HNO₃ and ozone near 32N, 80 mb, in the zonal mean plots.

1978 11 13—There is excess HNO₃ and ozone at 70 mb in one sector at 55S. On the listing of NO₂ scans removed, one scan had a value of $1 \times 10^{(+24)}$; should this have been written out?

1978 11 14—Data are OK.

1978 11 15—The high value of asc NO₂ in the NH polar region at 10 mb may be an artifact.

1978 11 16—Data look good.

1978 11 17—This was the first significant day of operations for the ERB scanner. Quite a few desc. scans were tossed out, especially for the NH. Water and NO₂ was flagged for exceeding their max. m.r. on orbits 333 and 334. There is a bad ozone data point at 60S near 70 mb, but it does not seem to perturb the 70 mb polar plot.

1978 11 18—There is a region of low water over the N. Pacific at 3 mb and 10 mb. May be due to a faulty interpolation in zonal direction for the polar plots. Note that the asc orbit and many descending scans are missing in NH over the N. Pacific.

1978 11 19—Data are good.

1978 11 20—Lots of descending scans were thrown out at RAT processing level.

1978 11 21—Quite a few descending NO₂ scans did not process successfully. There is an increase in desc NO₂ at 0.2 mb near the NH Pole—evidence of mesospheric source of NO₂ or an artifact?

1978 11 22—There is a loss of some descending scans. Otherwise the data are OK.

1978 11 23—There is a high value of ascending HNO₃ near 15S and 50 mb.

1978 11 24—The NH polar vortex is cold enough for PSC formation at 30 mb.

1978 11 25—LIMS was off for this day.

1978 11 26—There is a significant increase in the number of scans where the PSC flag was triggered. First indication of PSCs for this late autumn season. The 180 K contour shows up at 0.01 mb at high SH latitudes.

1978 11 27—There is a PSC remnant in descending NO₂ over Iceland at 30 mb, just where temperatures are coldest. PSC flag was tripped near 70 to 80 mb at about 60N, 330E. Some water scans exceeded 12 ppmv near 350 E and 20 mb. There are high values of NO₂ at 0.15 mb, 80N.

1978 11 28—LIMS was off for 4 orbits. There is a PSC remnant in water at 30 mb.

1978 11 29—There is PSC contamination in NO₂ at 30 mb in NH polar region. There is one point of high, spurious HNO₃ at 70 mb over the tropical Pacific.

1978 11 30—There are PSC remnants in NO₂ at 30 mb.